

8 for Plate 7. We notice, however, an improvement in the lithography. In his notes Mr. Maskell describes several new species, and advances our knowledge of the New Zealand fauna very considerably. In a paper on the spiders of New Zealand, Mr. A. T. Urquhart describes and figures a great many new species, chiefly from the neighbourhood of Auckland. Prof. Jeffrey Parker gives notes on the skeleton and baleen of a Fin Whale (*Balenoptera musculus*), and Mr. S. Mieson gives some interesting details about a plague of rats in Nelson.

Among the botanical memoirs may be noted those of Mr. T. Kirk, on the flora of Stewart Island. Prefaced by a short sketch of the island, and the facts previously known as to its natural history, Mr. Kirk gives the results of his investigations of its flora made during two visits in January, 1882, and in January, 1884. So far as at present known the flora of the island comprises about 380 species of Phænogams, and nearly 70 species of Pteridophytes. The area of the island is estimated at 640 square miles. Attention was at once attracted by the blaze of crimson presented by the flowers of *Metrosideros lucida*, often flecked by the beautiful pale racemes of *Weinmannia racemosa*. *Veronica salicifolia* occurred by the side of water-courses, but was far from common. The soil was often carpeted with a compact growth of the charming liliaceous plant *Callixene parviflora*, with its elegant drooping flowers. The terrestrial orchids formed a marked feature in some parts of the forest. *Coryanthes oblonga* and *C. rivularis* produced their attractive flowers literally by thousands. Arborescent ferns were abundant, the most abundant being *Dicksonia squarrosa* and *Hemitelia smithii*. The crest of Mount Anglem, the highest peak of the island, was ascended. The weather, unfortunately, was unfavourable, the driving snow obscuring the prospect. A splendid Alpine flora was discovered. *Dracophyllum muscoides* formed a compact dark green sward gemmed with white flowers; several species of *Coprosma*, *Ranunculus lyalii*, the beautiful *Ourisia sessiliflora*, also *O. caespitosa*.

On exposed portions of the coast on both sides of the island *Olearia angustifolia* was found; it is one of the grandest of flowering plants. Varying in size from shrubs of about 6 feet high, to a tree of 20 feet, the snowy ray florets, with the dark purple of those of the disk of the innumerable flower heads, set off by the dark, deep, glossy green foliage, form a never-tiring source of attraction, while the aromatic odour exhaled is of a grateful type. *O. trailii*, also another splendid species, but sparingly occurred. A list of the ferns and fern allies is given. *Todea superba* grows luxuriantly; one specimen was examined which had a stout stem some 18 feet high, from which arose a dense crown of nearly erect fronds, with drooping tips; some of these were several years old and were between four and five feet in length, of a deep blackish green. Mosses and large frondose Hepaticæ also abounded.

Mr. Cheeseman, Mr. Colenso, and Mr. Petrie, continue their descriptions of species new to science and to New Zealand.

In the section devoted to geology Capt. F. W. Hutton describes a large number of new Tertiary shells; Dr. J. von Haast has notes on the geological structure of the Southern Alps of New Zealand, in which he criticises Dr. Hector's recently-published map of this district; and Dr. Hector has a note on the geological structure of the Canterbury Mountains, in which he very temperately justifies changes in his views of geological periods as based on the progress of his knowledge of facts. Mr. James Parks's account of the ascent of Mount Franklin will be read with interest; though occupying a central position in the province of Nelson, it does not seem to have been before ascended. The Waiau Gorge is described as one of the most wonderful in New Zealand. On both sides the mountains frequently rise by a succession of steep, rugged precipices to a height of 3500 feet over the river. About 6050 feet high a small area of glacier ice was found, probably all that now remains of the great Waiau Glacier. Small patches of red snow were found; at 6500 feet in height permanent snow-fields were met with, and the top of the range, described as a mere razor-back, only a few feet wide, and composed of loose, angular, and slab-like rocks was found to be 7500 feet high. The highest peak, by aneroid measurement, was 350 feet higher. A list of the Alpine plants collected on the occasion, and determined by Mr. J. Buchanan, is appended.

It will be judged from this short notice that this volume, edited by Dr. Hector, is one coming in no way short of its predecessors and that it reflects credit on the scientific workers of New Zealand.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

OXFORD.—A Fellowship will be filled up in Lincoln College in January next.

The Examination will be in the subjects of Animal Physiology and Animal Morphology; and candidates are invited to send in any treatises or theses that they may have written or published in special branches of one or both of these subjects.

Candidates should communicate at once with the Rector, who will furnish them with full information as to the conditions and tenure of the Fellowship.

CAMBRIDGE.—Another development from Prof. Stuart's School of Engineering is probable. The Special Board for Physics and Chemistry, considering the number of students of engineering warrants such a step, propose for their benefit an Honours Examination, to be connected with the Natural Sciences Tripos. Certain branches of Mathematics, useful alike for students of Engineering, Physics, and Chemistry, are to be introduced into an examination alternative with the first part of the Natural Sciences Tripos. Papers should be included on Principles of Measurement, Theory of Structures, Properties of Matter, Principles of Mechanism, and other branches of Physics and Chemistry, and there should be practical work in Engineering, as well as in Physics and Chemistry, each candidate being required to pass the practical examination in at least one of these three subjects. A student passing this examination with credit in his third year should be entitled to a degree in honours.

A second higher Examination is proposed, to be concurrent with the second part of the Natural Sciences Tripos, in the same subjects as above-mentioned, and the examiners should be at liberty to set questions involving the Mathematics of the first Examination, and in those parts of Mineralogy which belong to Physics and Chemistry. Other conditions are similar to those of the Natural Sciences Tripos. The Special Board for Mathematics has expressed its general approval of the scheme.

At St. John's College E. H. Hankin and F. S. Locke, both of St. Bartholomew's Hospital Medical School, have been elected to Exhibitions of 50*l.* a year in Natural Science. In Mathematics, F. M. Monro, King William's College, has been elected to a Foundation Scholarship of 80*l.* a year; A. G. Cooke, City of London School, to a Minor Scholarship of 75*l.* a year; A. Kahn, Middle Class School, Cowper Street, E.C., and J. A. Lawrenson, Liverpool Institute, to Minor Scholarships of 50*l.* a year; W. H. Box, University College, Aberystwith, and S. Humphries, Middle Class School, Cowper Street, E.C., to Exhibitions of 40*l.* a year for three years.

SCIENTIFIC SERIALS

The Journal of Anatomy and Physiology for October (vol. xx, part 1) contains:—On the anatomy of the muscles, ligaments, and fascia of the orbit, by C. B. Lockwood (plate 1).—Two cases of an abnormal coronary artery of the heart arising from the pulmonary artery, by Dr. H. St. John Brooks (plate 2).—On a second bursa connected with the insertion of the biceps, &c., by A. Ward Collins.—Abnormalities of the lobes of the human lung, by A. E. Maynard.—On the nature of ligaments, part 4, by J. Bland Sutton (plate 3).—Vital relations of micro-organisms to tissue elements, by Drs. G. S. Woodhead and A. W. Hare.—The blood-forming organs and blood-formation: an experimental research, part ii., by Dr. J. Lockhart Gibson.—The relationship of urea-formation to bile-secretion: an experimental research, by Dr. Noel-Paton.—The index of the pelvic brim as a basis of classification; and on the anatomy of Sowerby's whale, by Prof. W. Turner (plate 4).

The Quarterly Journal of Microscopical Science for October contains:—On the chromatology of the blood of some invertebrates, by Dr. C. A. MacMunn (plates 33 and 34). Among other pigments referred to, the colouring-matter of the perivisceral fluid of *Strongylocentrotus lividus*, named echinochrome, is described in detail.—On the cephalic appendages of the gymnosomatous Pteropoda, and especially of Clione, by Dr. Paul Pelseneer (plate 35). The cephalic appendages in Clione, Clionopsis, and Pneumodermon are described. In Clione there are tentacles, properly so called, and buccal cones. In Pneumodermon there are tentacles and two acetabuliferous buccal appendages, and in Clionopsis only tentacles are found. While the author leaves the function of the buccal cones in Clione

doubtful, there can be no doubt as to the sucker-like functions of the appendages in Pneumodermon.—Evidence in favour of the view that the coxal gland of Limulus and of other Arachnida is a modified nephridium, by G. L. Gulland, M.A. (plate 36), with a note thereon by Prof. E. Ray Lankester, in which the following important statement is made:—"The space in the connective tissue into which the young nephridium opens internally is not a blood space. The blood system in the larger Arthropoda is altogether distinct from the general system of lacunæ of the connective tissue. The lacunæ form a lymphatic system which contains a liquid distinct from the blood: they represent the body cavity, and as such receive the internal openings of the nephridia."—Notes on the embryology of Limulus, by Dr. J. S. Kingsley (plates 37-39).—On the anatomy of the Madreporaria, part i., by G. Herbert Fowler, B.A. (plates 40-42).—The issue of the "Supplement" numbers of this journal being found inconvenient, it has been decided to publish its numbers for the future at such intervals as the accumulation of material renders desirable. Though more than four numbers will thus in all probability be published in the course of a year, the title will remain unaltered. Four numbers will make a volume.

Two papers are especially noteworthy in the *Journal of Botany* for November:—Rev. H. E. Fox and Mr. F. J. Hanbury's "Botanical Notes of a Tour in Caithness and Sutherland," where they had the opportunity of visiting large tracts of country from which botanists are, as a rule, now practically shut out, that they may not interfere with the sports of the owners; and Mr. F. N. Williams's careful "Enumeration of the Species and Varieties of *Dianthus*."

The number for December is signalled by a continuation of the record of Mr. Thos. Hick's important observations on protoplasmic continuity in the Fucaceæ. He has now detected this continuity in two other species, *Hemanthalea lorea* and *Laminaria digitata* (the latter not strictly belonging to the Fucaceæ), in the cortical and central, less certainly in the epidermal tissue. In the latter species the continuity is effected through the intervention of sieve-plates. Mr. James Britten gives a complete history of the important botanical collections made by Messrs. J. R. and G. Forster.

The Proceedings of the Linnean Society of New South Wales, vol. x. part 2, July 31, contains the following papers:—W. Macleay, revision of the genus *Lamprina*, and descriptions of new species; on two new Australian Lucanidæ; on new fishes from the Upper Murrumbidgee.—N. de Miklouho-Maclay, on the zoology of the Maclay coast, New Guinea, ii.; on two new species of Dorcopsis (plates 19 and 20); on the brain of *Halicore australis* (plate 24).—Dr. R. von Lendenfeld, on Australian sponges lately described by Carter; on a Medusa from the tropical Pacific.—A. G. Hamilton, on the fertilisation of *Goodenia hederacea* (plate 21).—K. H. Bennett, on the habits of *Falco subniger* and *Glareola prallaria*.—Rev. J. M. Curran, on the geology of Dubbo (plates 22 and 23).—Baron von Mueller, on a remarkable Haloragis from New South Wales.—A. S. Olliff, the Cucujidæ of Australia.—D. Ogilvy, description of new fishes.—E. P. Ramsay, notes on birds from New Guinea; on a new species of Collyriocincla.—G. F. Mathew, R.N., on the natural history of Claremont Islands; on the butterflies of Thursday Island.—W. A. Haswell, M.A., jottings from the biological laboratory of Sydney University.

Zeitschrift für wissenschaftliche Zoologie, Band 42, Heft 3, October 27.—On the movements of the foot in the Lamellibranchs, by Dr. A. Fleischmann (with five woodcuts).—On the oceanic fauna off the coast of New Guinea, by Dr. R. Greeff (plates 12-14). Rolas or Pigeon Island is separated from St. Thomas by a channel of from 3 to 4 km. wide. Under favourable winds, shoals of larval and mature Crustacea, Mollusca, Echinoderm larva, Medusa, Radiolaria, &c., float through. The general description of the place is most alluring; surely the proprietor, Mr. F. José de Araujo is in the possession of an earthly paradise for a marine zoologist. In this memoir Dr. Greeff describes and figures several new species of Tomopteris and Alciopæ, giving, at the same time, anatomical details.—Contributions to the anatomy and histology of *Priapulus caudatus*, Lam., and *Halicryptus spinulosus*, V. Sieb., by Dr. W. Apel (plates 15-17).—Contributions to our knowledge of the Mallophaga, by Dr. F. Grosse (plate 18). These researches are chiefly based on a remarkable new parasite from a pelican found by Dr. Reiss in Chili, which is described as belonging to a new genus and species (*Tetrophthalmus chilensis*).—On the

reproductive organs in *Nematois metallicus*, Pod., by N. Chodkovsky (plate 19), a memoir of importance to the Lepidopterist.

Archives Italiennes de Biologie, tome vi. fasc. 2, March 31, contains:—Clinical and physiological researches on paraldehyde, by Dr. V. Cervello.—On the physiological action of antipyrine, by Dr. F. Coppola.—On perimetry, and on self-registering perimeters, by Dr. Ferri.—On the effects of salt on Cercaria, by Prof. E. Perroncito.—On cicatrisation after wounds in the kidney; and on the partial regeneration of that organ, by G. Pisenti (plate).—On albumen in the saliva, and the bile in albuminuria, by Matilda Dessalles.—On the minute structure of the air-sacs in birds, by Dr. E. Ficalbi (abstract).—On anomalies in the number of the semi-lunar, aortic, and pulmonary valves, by G. Martinotti, and G. Sperino.—On microphytes in the normal human epidermis, by Prof. G. Bizzozero (from *Virchow's Archiv*), December, 1884 (plate).—On the organ of Corti in the Cercopitheci, by Prof. A. Tafani (illustrated).—Notes on the anatomy of a negro (iii.), by Prof. Giacomini (plates).

The October number of the *Nuovo Giornale Botanico Italiano* contains only two original papers:—On the Bryology of the neighbourhood of Cuneo, by Sig. Macchiati; and On the nature and development of the integuments of the seed in *Tilia*, by Sig. Mattiolo. These integuments may be classified into two layers, the inner of which displays the light line characteristic of the genus *Tilia*, and which is due to the formation of lignin.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, December 17.—"A New Form of Spectroscope." By J. Norman Lockyer, F.R.S.

Some two or three years ago, when the sun-spot work carried on at Kensington revealed the different behaviour, in different spots, of lines visible in the spectra of the same element, it seemed desirable to extend similar observations to metallic prominences, and, if possible, in such a way that comparisons over a considerable reach of spectrum should be secured.

It then struck me that a grating cut in half, with one part movable, would afford a ready means of doing this.

Circumstances prevented the realisation of this scheme till quite recently, when I put into Mr. Hilger's hands a grating presented to me by Mr. Rutherford.

The result is excellent. It is possible to observe C and F, for instance, together, quite conveniently, with either a normal or a tangential slit. The only precautions necessary are to see that one-half of the light passing through the object-glass falls on one-half of the grating, and that the rays which come to a focus on the slit plate are those the wave-length of which is half way between the wave-lengths compared.

Linnean Society, December 17.—Mr. Frank Crisp, LL.B., Vice-President and Treasurer, in the chair.—*Heritiera littoralis*, var. *macrophylla*, Dr. Masters showed a branch with leaves and fruit, received from Prof. Cornu, of the Jardin des Plantes, Paris. The adult leaves, of very large size, are dark green above, and silvery white beneath. The latter, due to an investment of shining, peltate, membranous scales, has given rise to the name "Looking-glass tree." This Sterculaceous tree is a native of the tropics of the Old World, in the vicinity of coasts, and occurs inland in the hills of Eastern Bengal. Kurz considered the species and its variety as quite distinct, a view not held by Dr. Masters.—Mr. Charles Stewart exhibited the stridulating organ of a Spiny Lobster (*Palinurus*); he showed under the microscope the file-like bow and its two tubercles, also, by means of a softened specimen attached to the carapace, he produced the peculiar grating noise which the animal makes during life.—Mr. J. G. Baker exhibited specimens of *Lycopodium complanatum*, collected by the Rev. A. Lawson on the Somersetshire side of Exmoor, near Porlock, thus corroborating those who have ascribed a British habitat to the species in question.—Mr. Clement Reid drew attention to a series of fossil seeds and plants from the "Forest Bed" of the Cromer district, Norfolk; their very excellent state of preservation enabled their comparisons with living plants to be easily made out, and thus a clue given to the history of our present flora.—Mr. Thos. Christy exhibited a plant of *Angræcum sesquipedale* in flower, and a plant of *Catasetum purum*, showing flowers erect and reversed in the same spike. In none of the flowers was the ovary visibly twisted, but in long ovaried orchids it is often very difficult to detect the twisting of the ovary by the external aspect. This